3773

FIG. 1

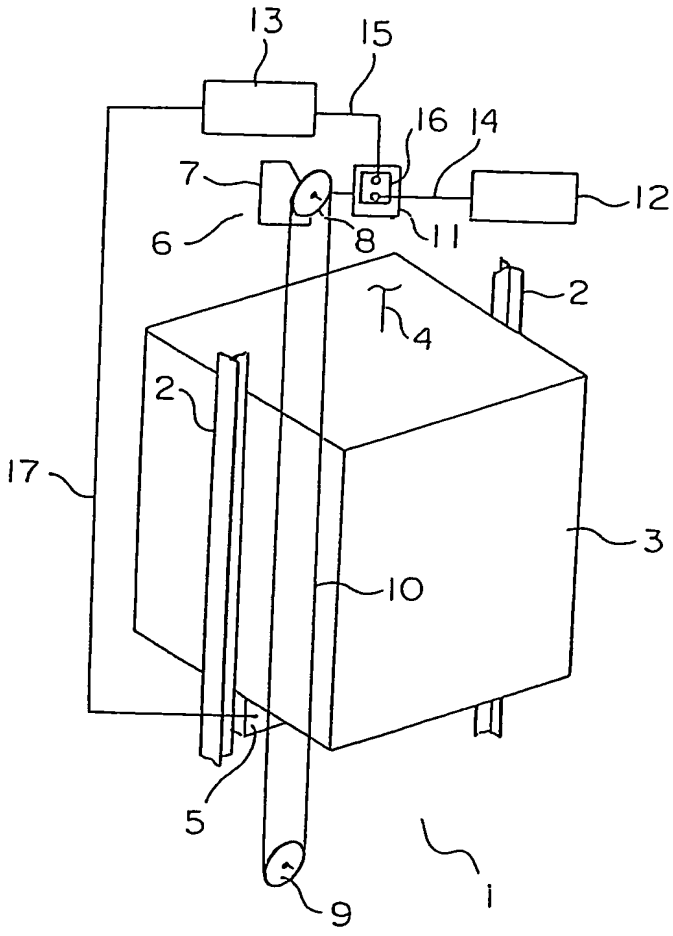


FIG. 2

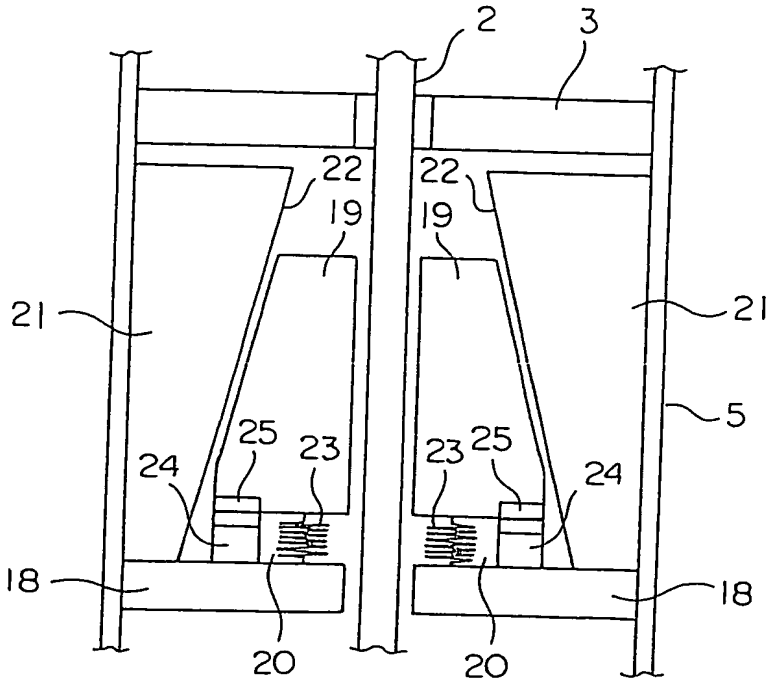

2
3
22
22
19
19
21
21
5
25
23
23
25
24
24
18
18
20
20

FIG. 3

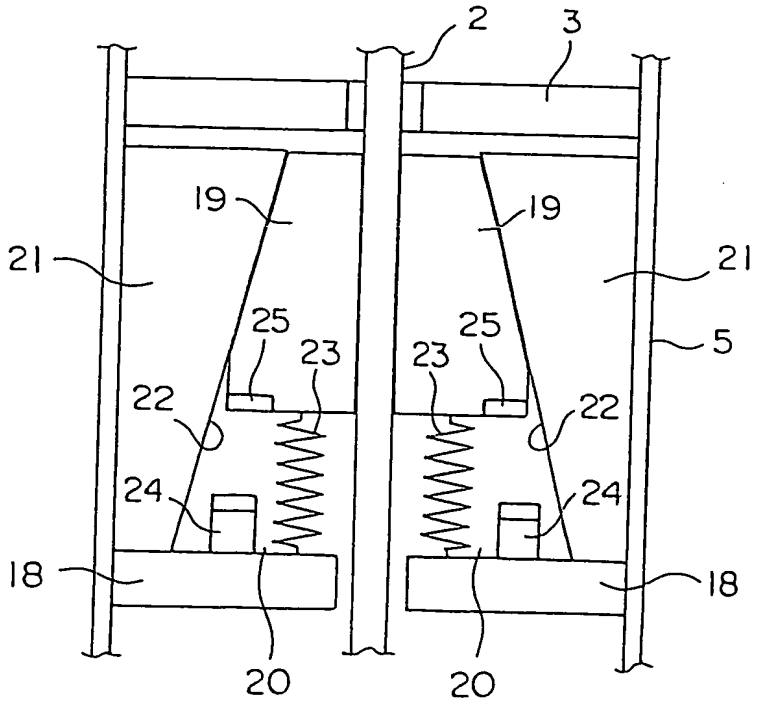

2
3
19
19
21
21
5
25
23
23
25
22
22
24
24
18
18
20
20

FIG. 4

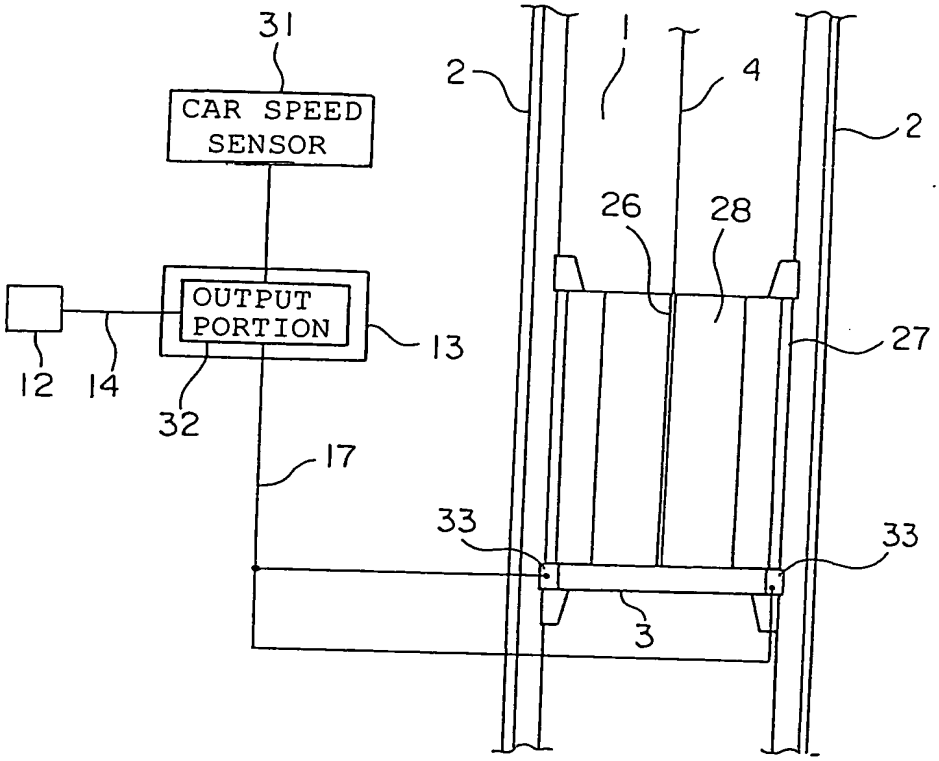

31
CAR SPEED SENSOR
OUTPUT PORTION
13
12
14
32
17
1
2
4
2
26
28
27
33
33
3

FIG. 5

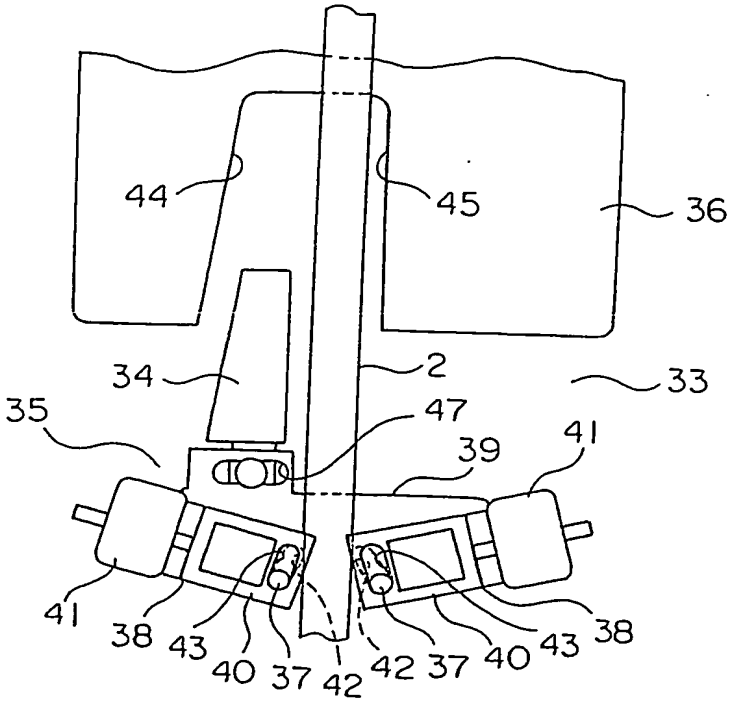

44
45
36
34
2
33
35
47
39
41
41
38
43
40
37
42
42
37
40
43
38

FIG. 6

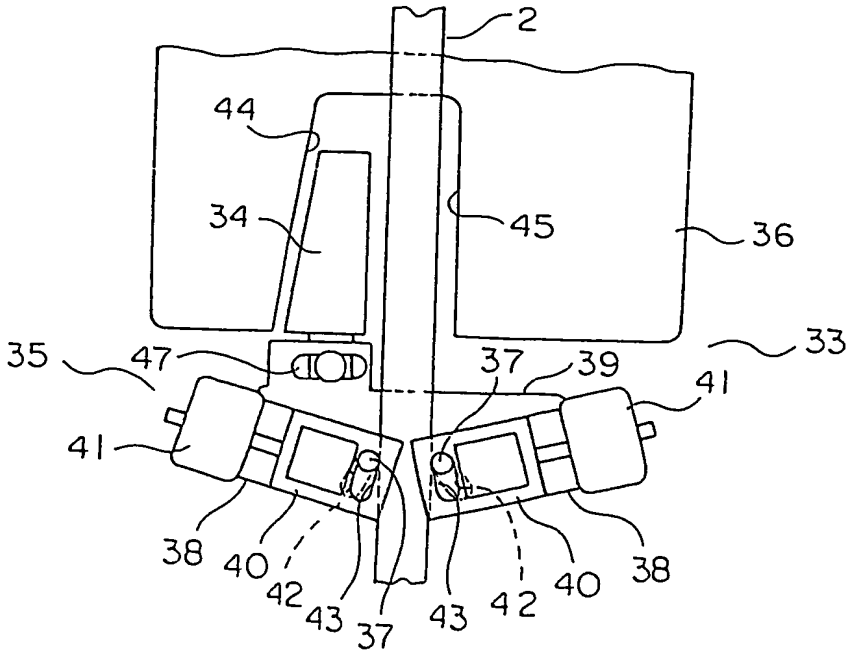

2
44
34
45
36
33
35
47
37
39
41
41
38
40
42
43
37
43
42
40
38

FIG. 7

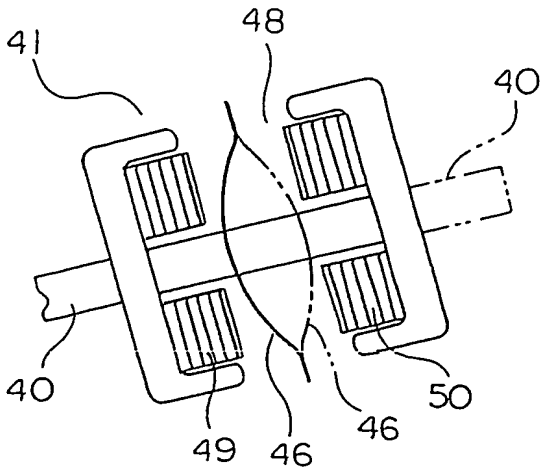

41
48
40
40
50
49
46
46

FIG. 8

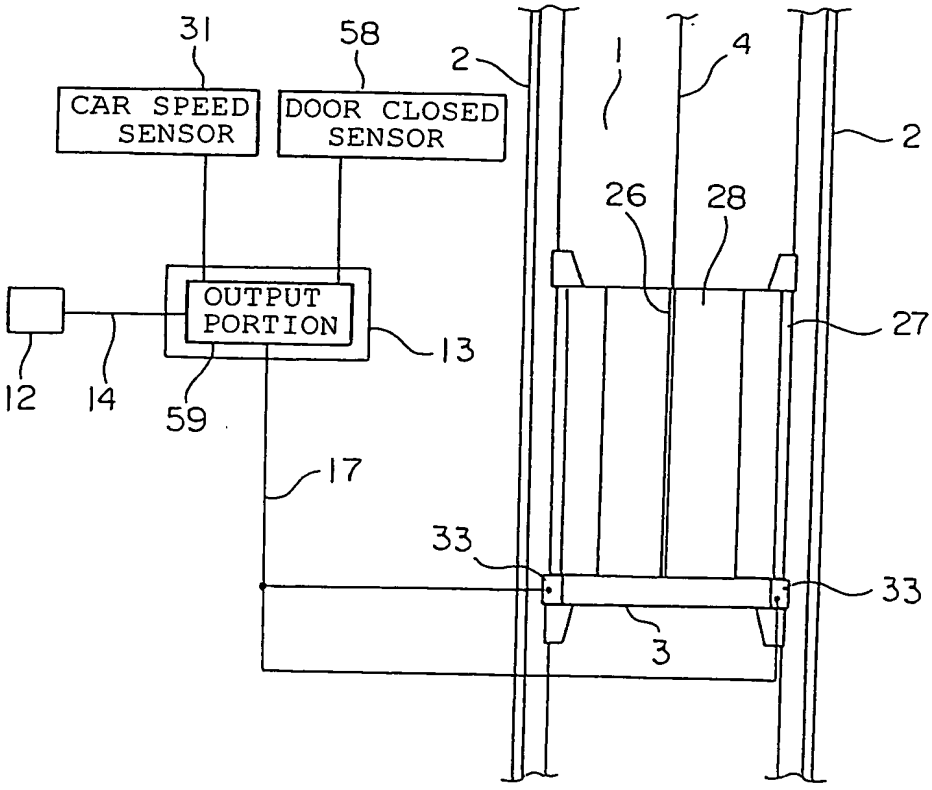

31
58
CAR SPEED SENSOR
DOOR CLOSED SENSOR
OUTPUT PORTION
13
12
14
59
17
2
1
4
2
26
28
27
33
33
3

FIG. 9

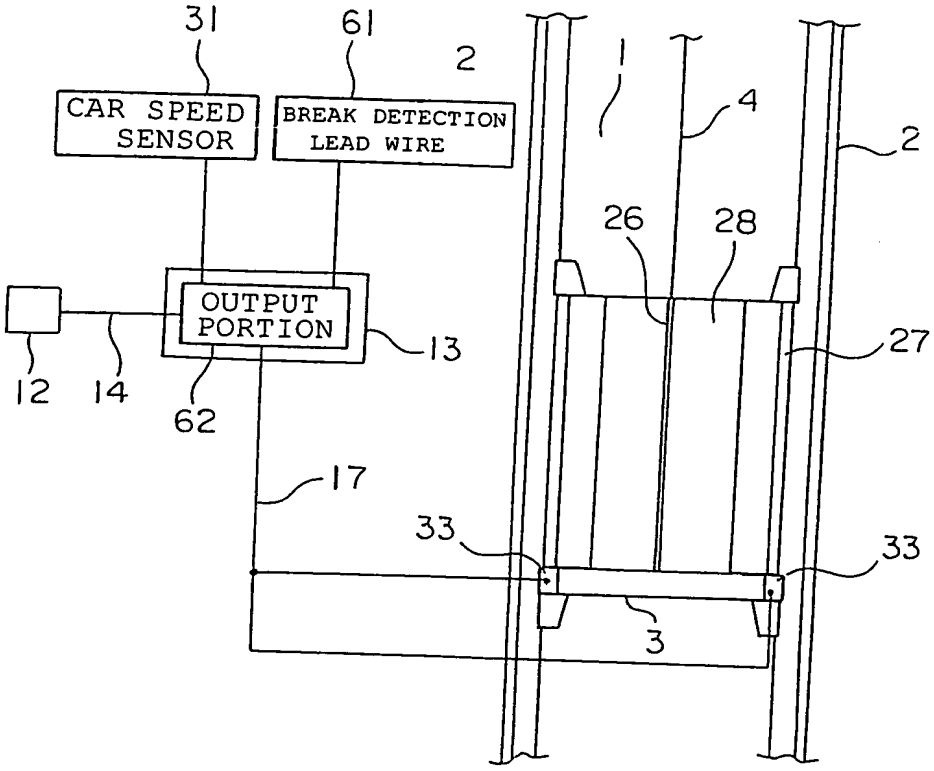

31
61
2
1
4
2
CAR SPEED SENSOR
BREAK DETECTION LEAD WIRE
26
28
OUTPUT PORTION
13
27
12
14
62
17
33
33
3

FIG. 10

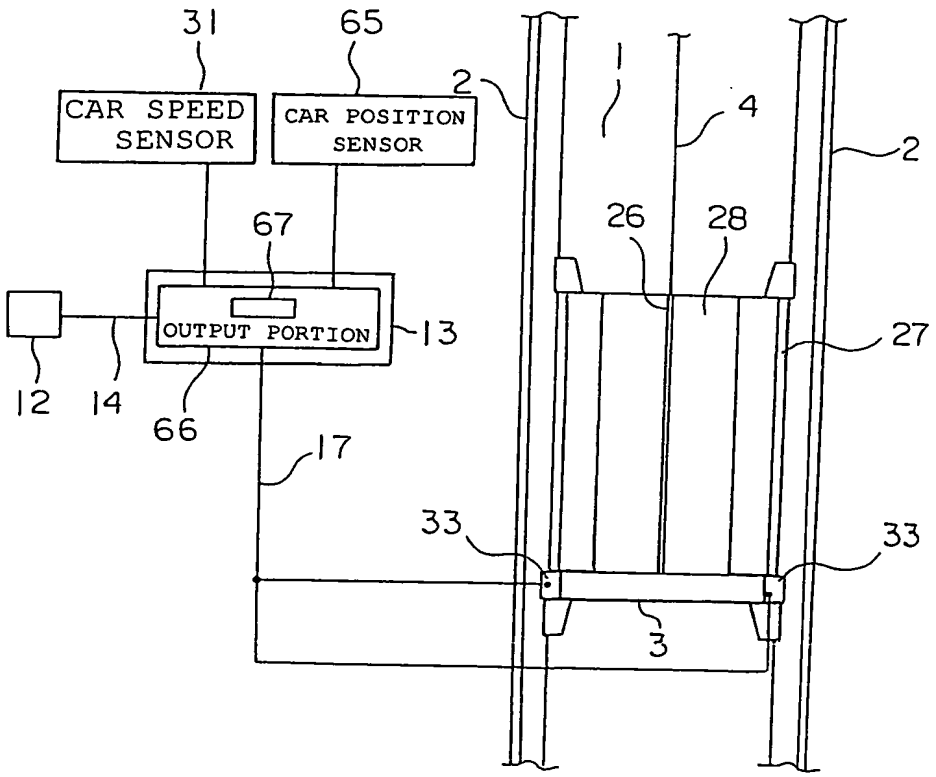

31
65
CAR SPEED SENSOR
CAR POSITION SENSOR
2
1
4
2
67
26
28
OUTPUT PORTION
13
27
12
14
66
17
33
33
3

FIG. 11

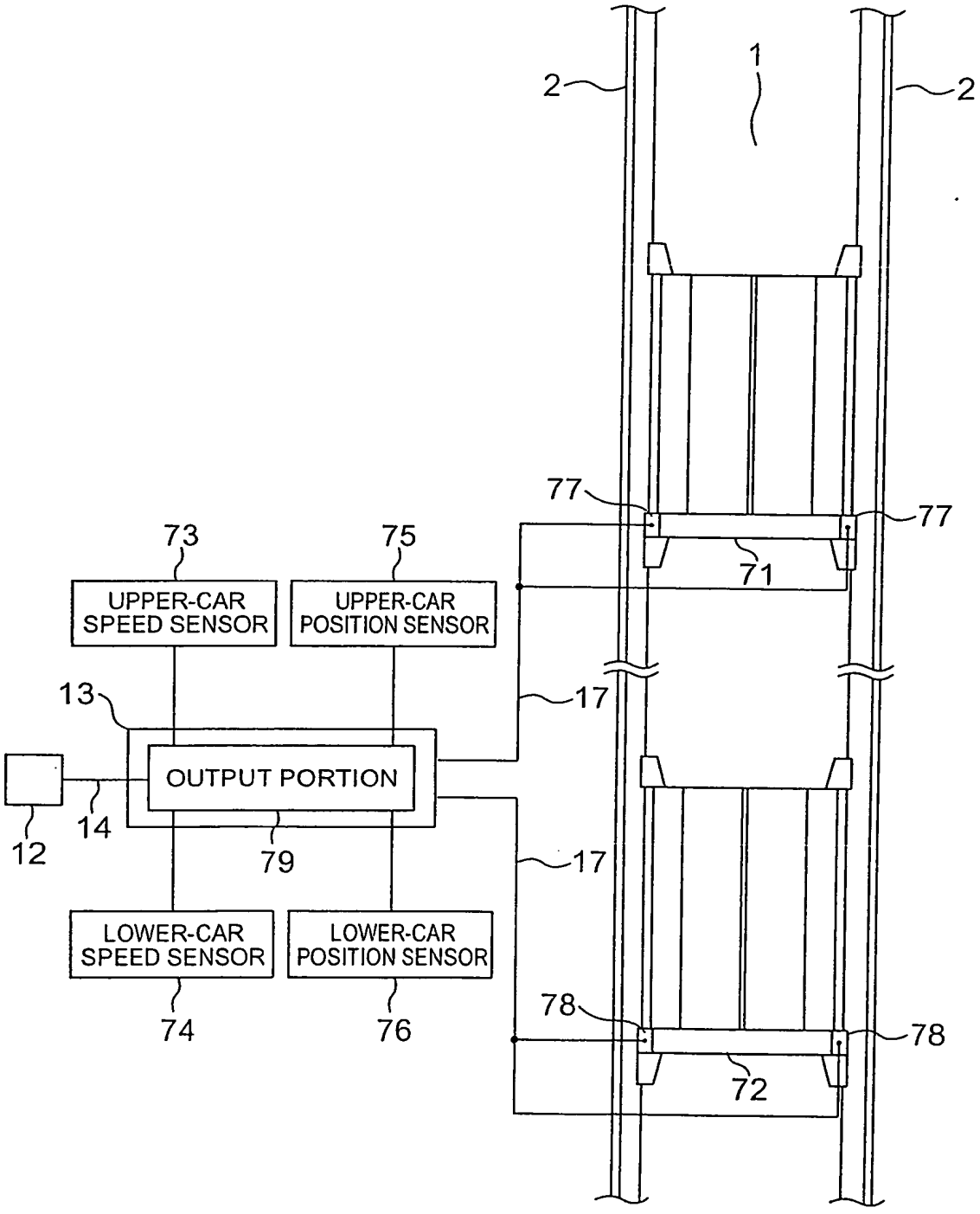

1
2
2
77
77
71
73
75
UPPER-CAR SPEED SENSOR
UPPER-CAR POSITION SENSOR
13
17
OUTPUT PORTION
12
14
79
17
LOWER-CAR SPEED SENSOR
LOWER-CAR POSITION SENSOR
74
76
78
78
72

FIG. 12

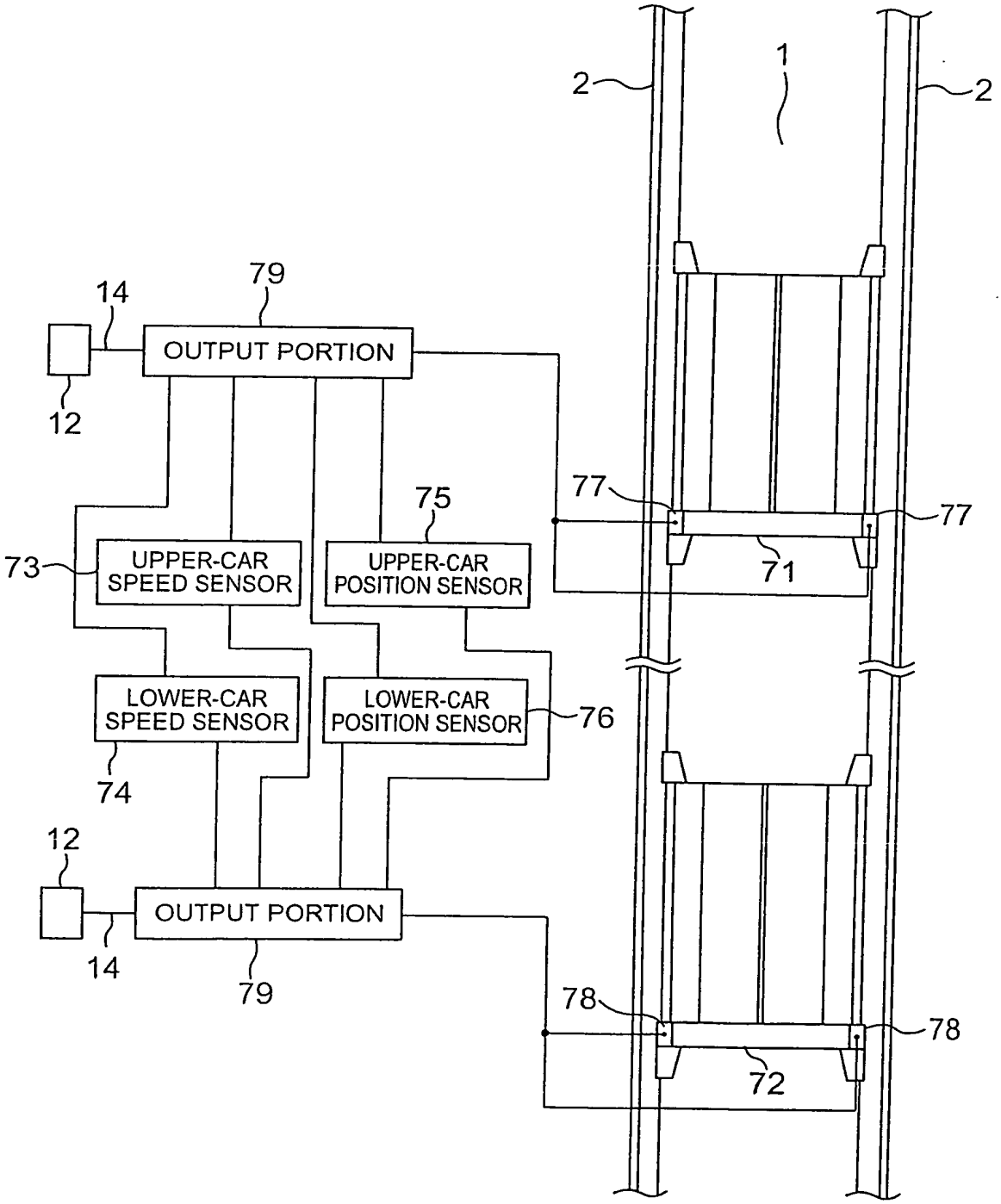

1
2
2
79
14
OUTPUT PORTION
12
77
77
75
73
UPPER-CAR SPEED SENSOR
UPPER-CAR POSITION SENSOR
71
LOWER-CAR SPEED SENSOR
LOWER-CAR POSITION SENSOR
76
74
12
OUTPUT PORTION
14
79
78
78
72

FIG. 13

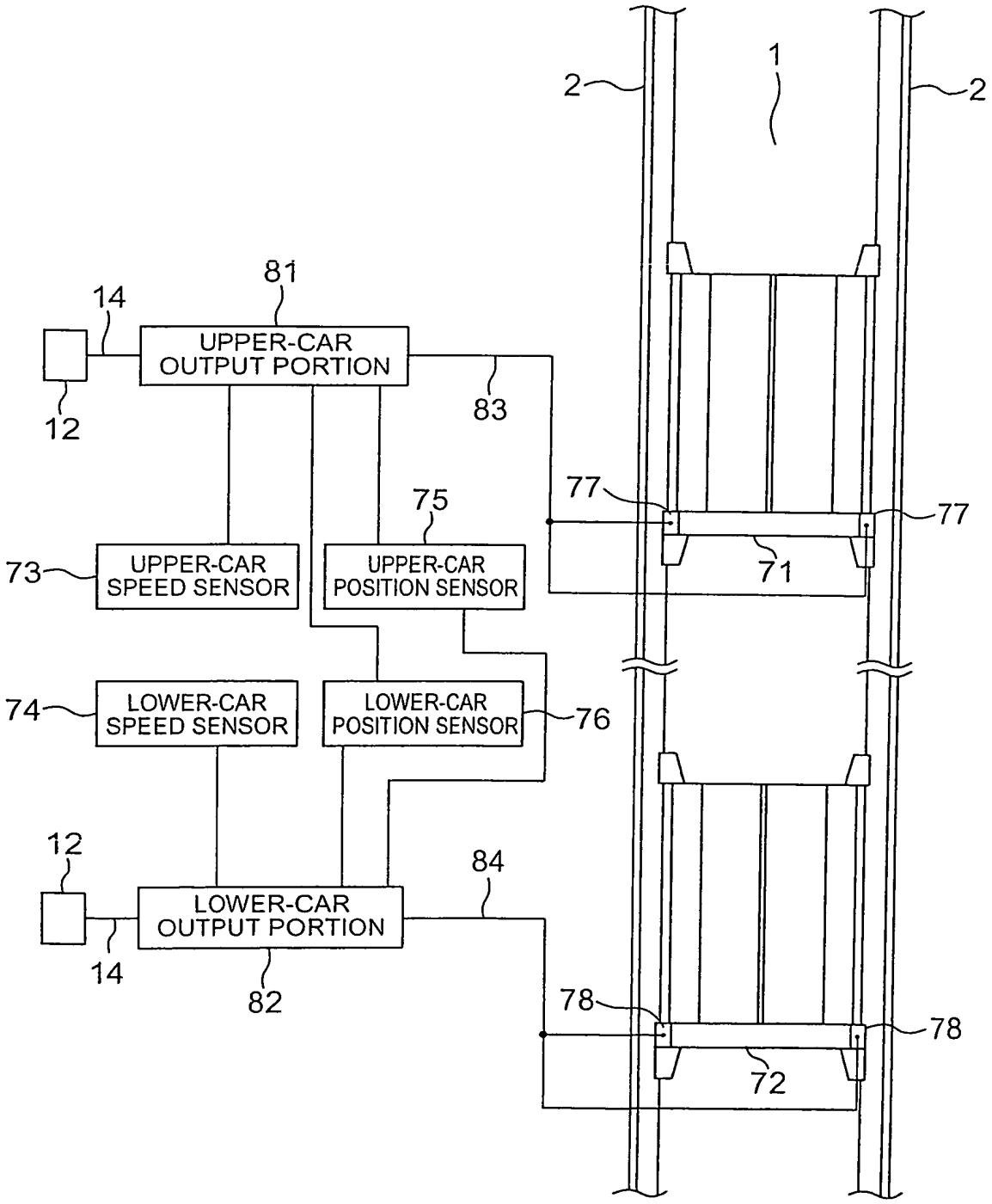

1
2
2
81
14
UPPER-CAR OUTPUT PORTION
12
83
77
77
75
73
UPPER-CAR SPEED SENSOR
UPPER-CAR POSITION SENSOR
71
74
LOWER-CAR SPEED SENSOR
LOWER-CAR POSITION SENSOR
76
12
84
LOWER-CAR OUTPUT PORTION
14
82
78
78
72

FIG. 14

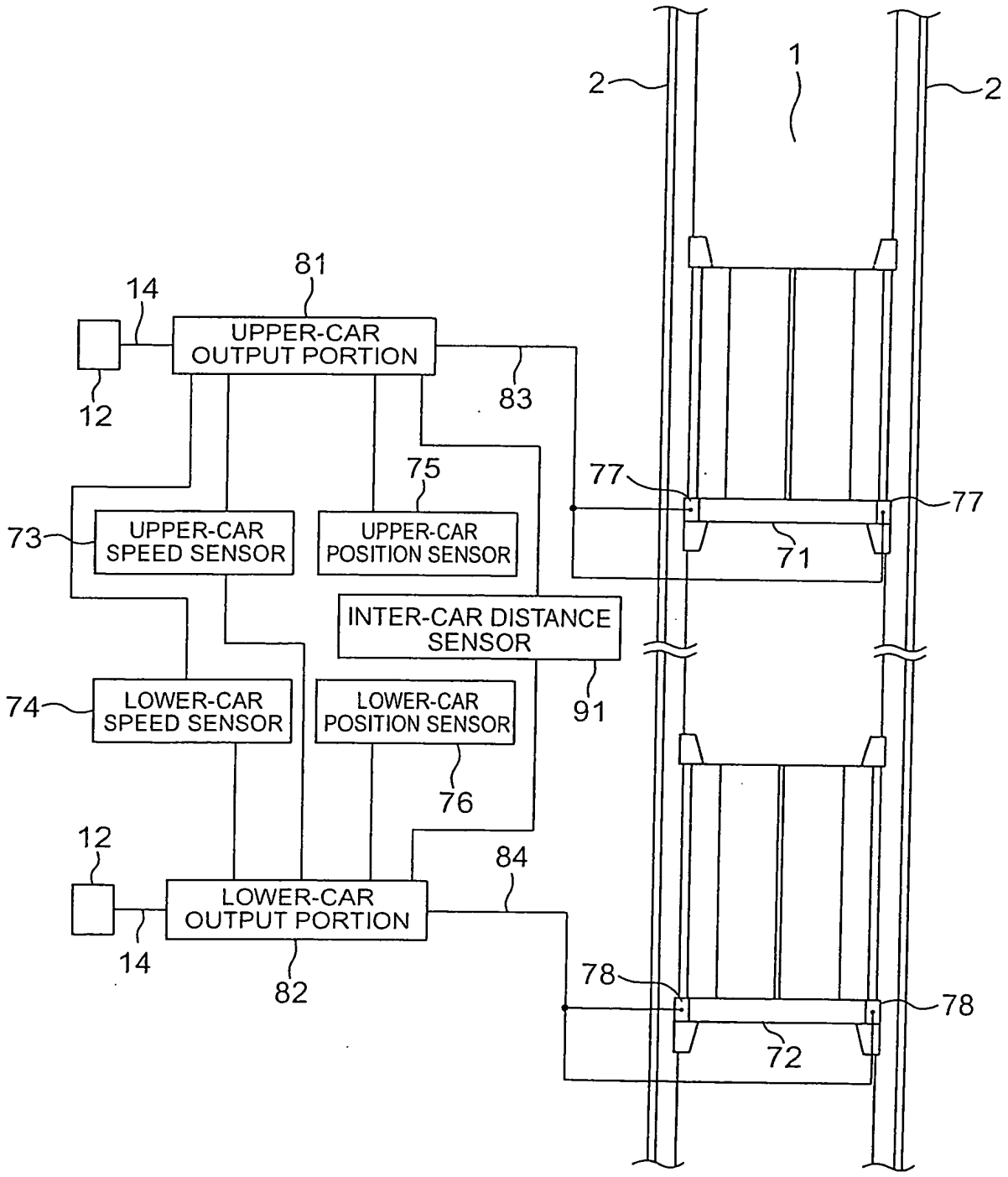

1
2
2
81
14
UPPER-CAR OUTPUT PORTION
12
83
75
77
77
73
UPPER-CAR SPEED SENSOR
UPPER-CAR POSITION SENSOR
71
INTER-CAR DISTANCE SENSOR
91
74
LOWER-CAR SPEED SENSOR
LOWER-CAR POSITION SENSOR
76
12
84
LOWER-CAR OUTPUT PORTION
14
82
78
78
72

FIG. 15

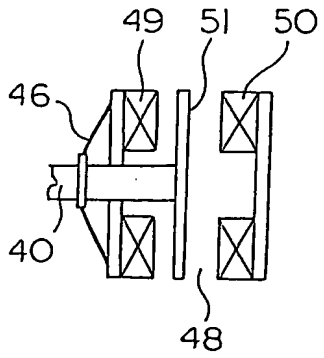


FIG. 16

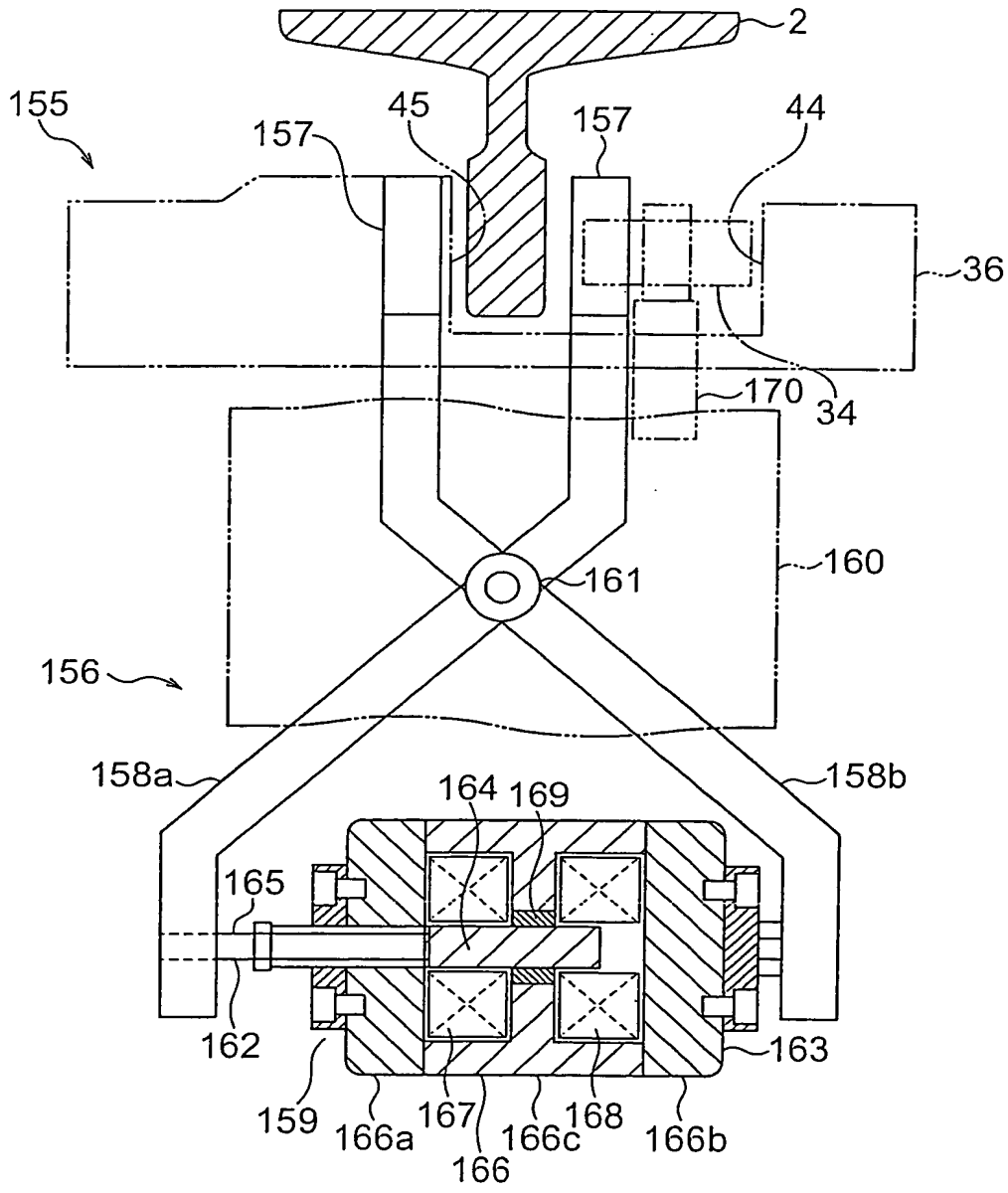

2
155
45
157
157
44
36
170
34
160
161
156
158a
158b
164
169
165
162
163
159
166a
167
166
166c
168
166b

FIG. 17

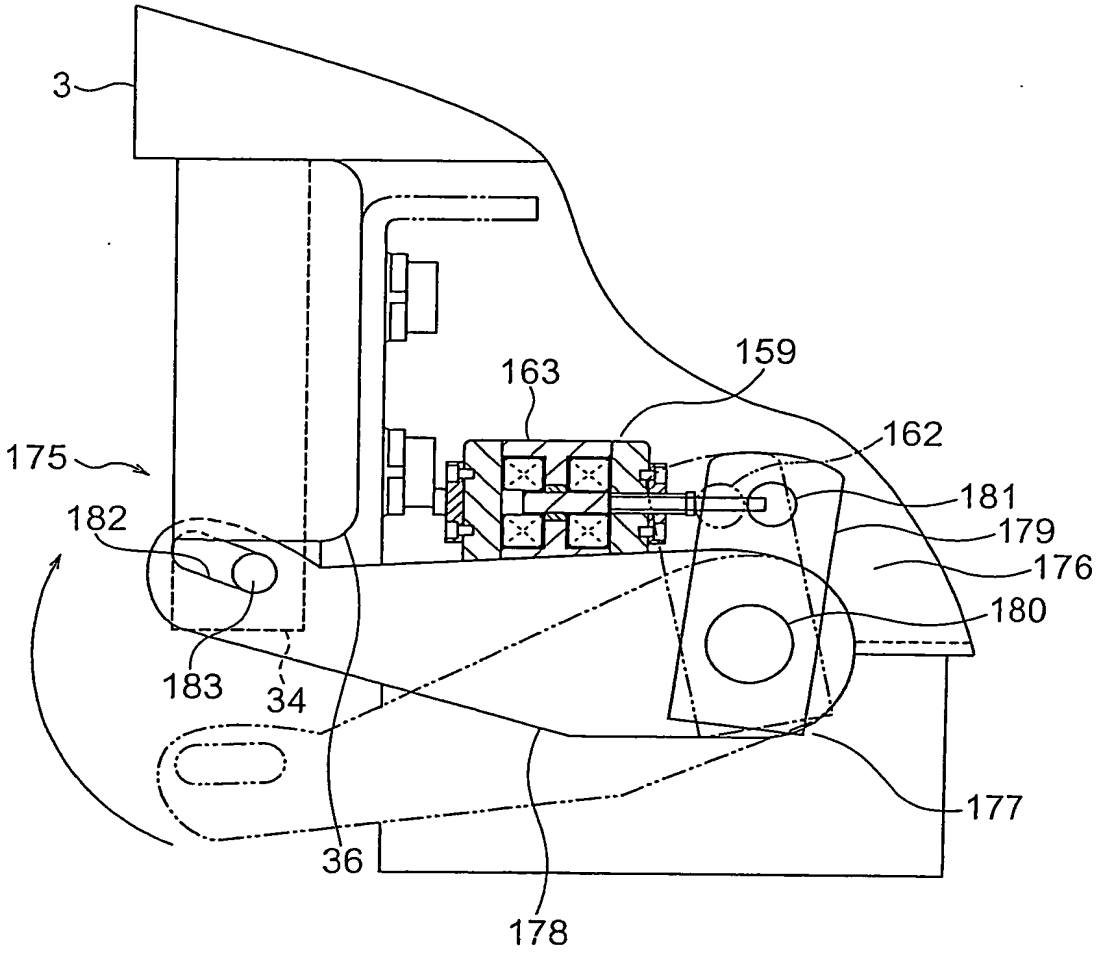


FIG. 18

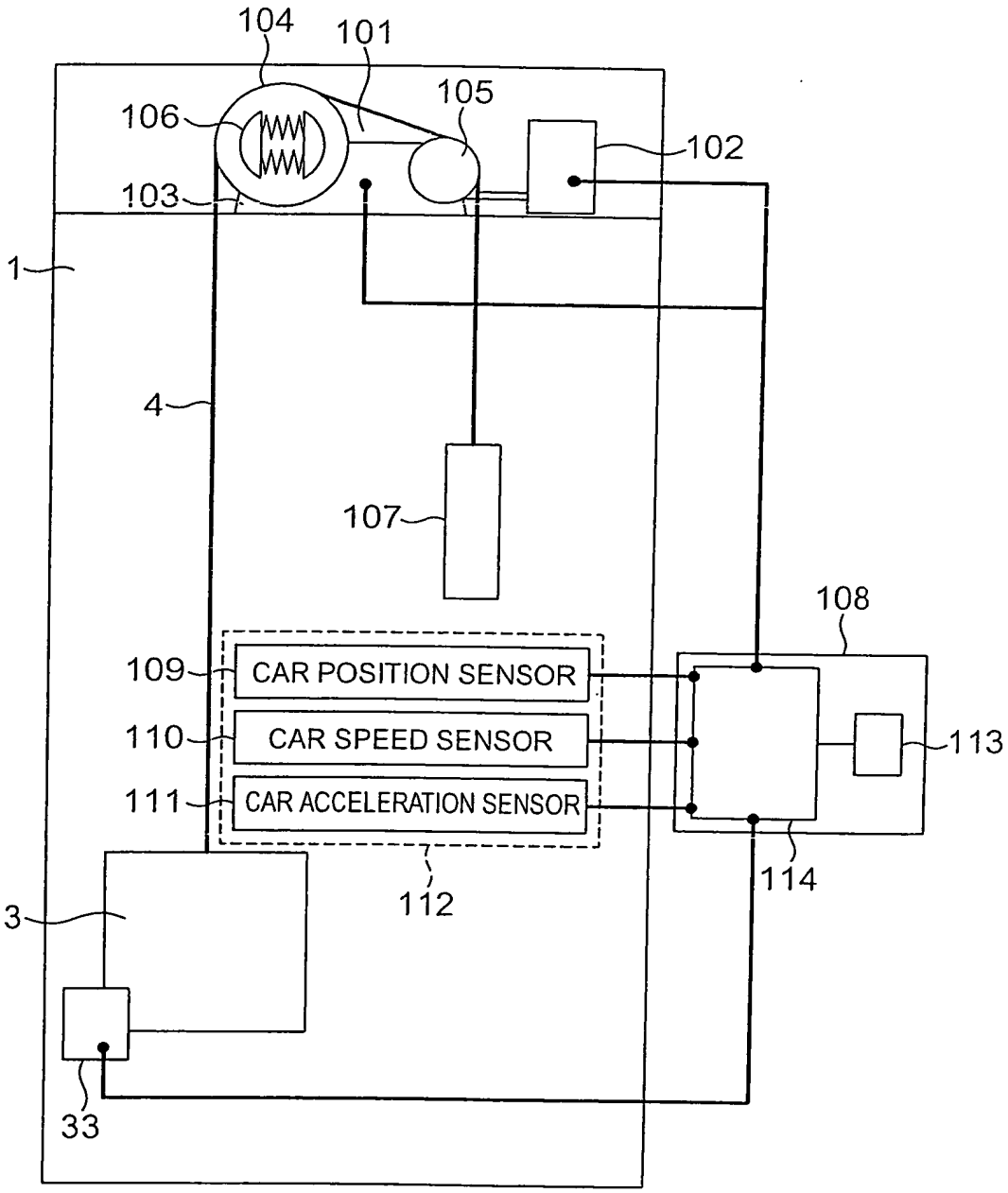

104
101
105
106
102
103
1
4
107
108
109
CAR POSITION SENSOR
110
CAR SPEED SENSOR
113
111
CAR ACCELERATION SENSOR
112
114
3
33

FIG. 19

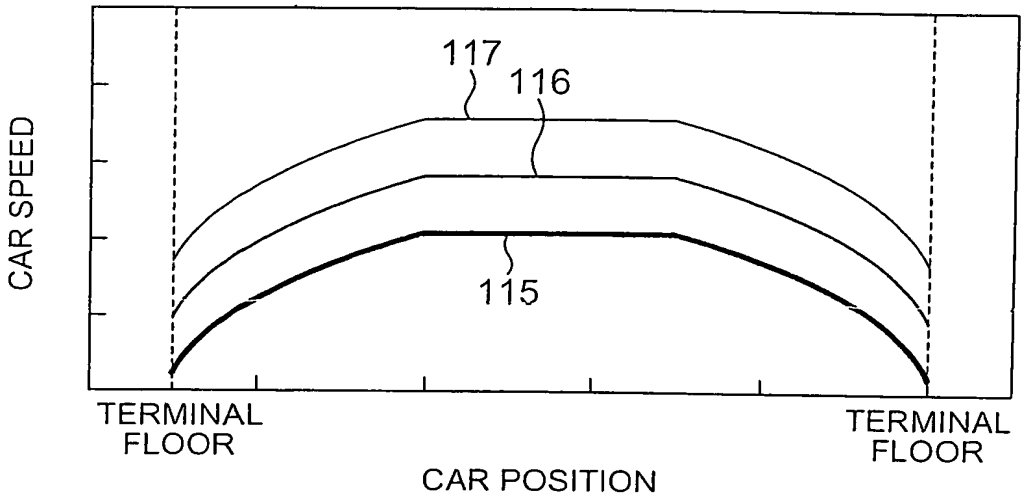

117
116
115
CAR SPEED
TERMINAL FLOOR
TERMINAL FLOOR
CAR POSITION

FIG. 20

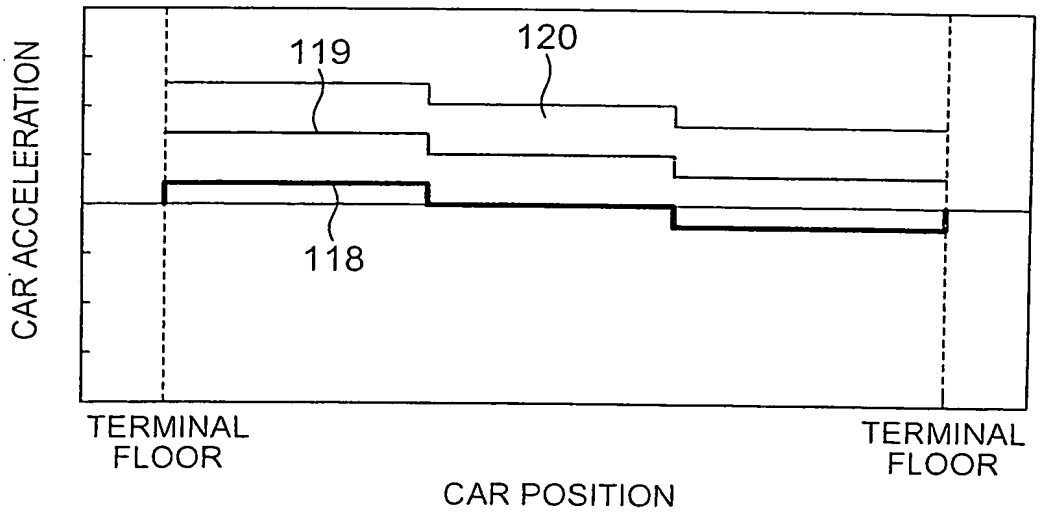

119
120
118
CAR ACCELERATION
TERMINAL FLOOR
TERMINAL FLOOR
CAR POSITION

FIG. 21

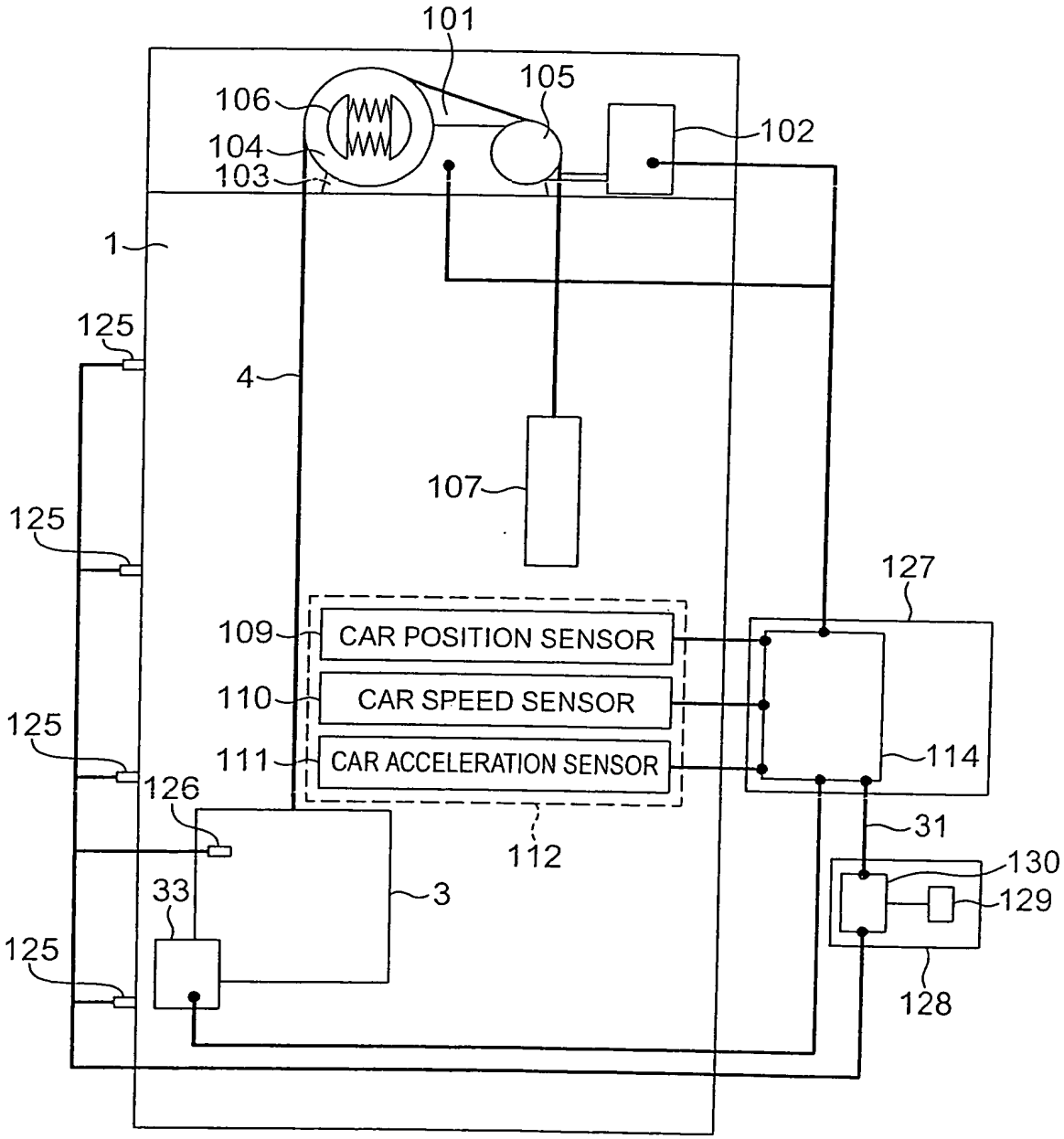

101
105
106
104
103
102
1
125
4
107
125
127
109
CAR POSITION SENSOR
110
CAR SPEED SENSOR
125
111
CAR ACCELERATION SENSOR
114
126
31
112
130
33
3
129
125
128

FIG. 22

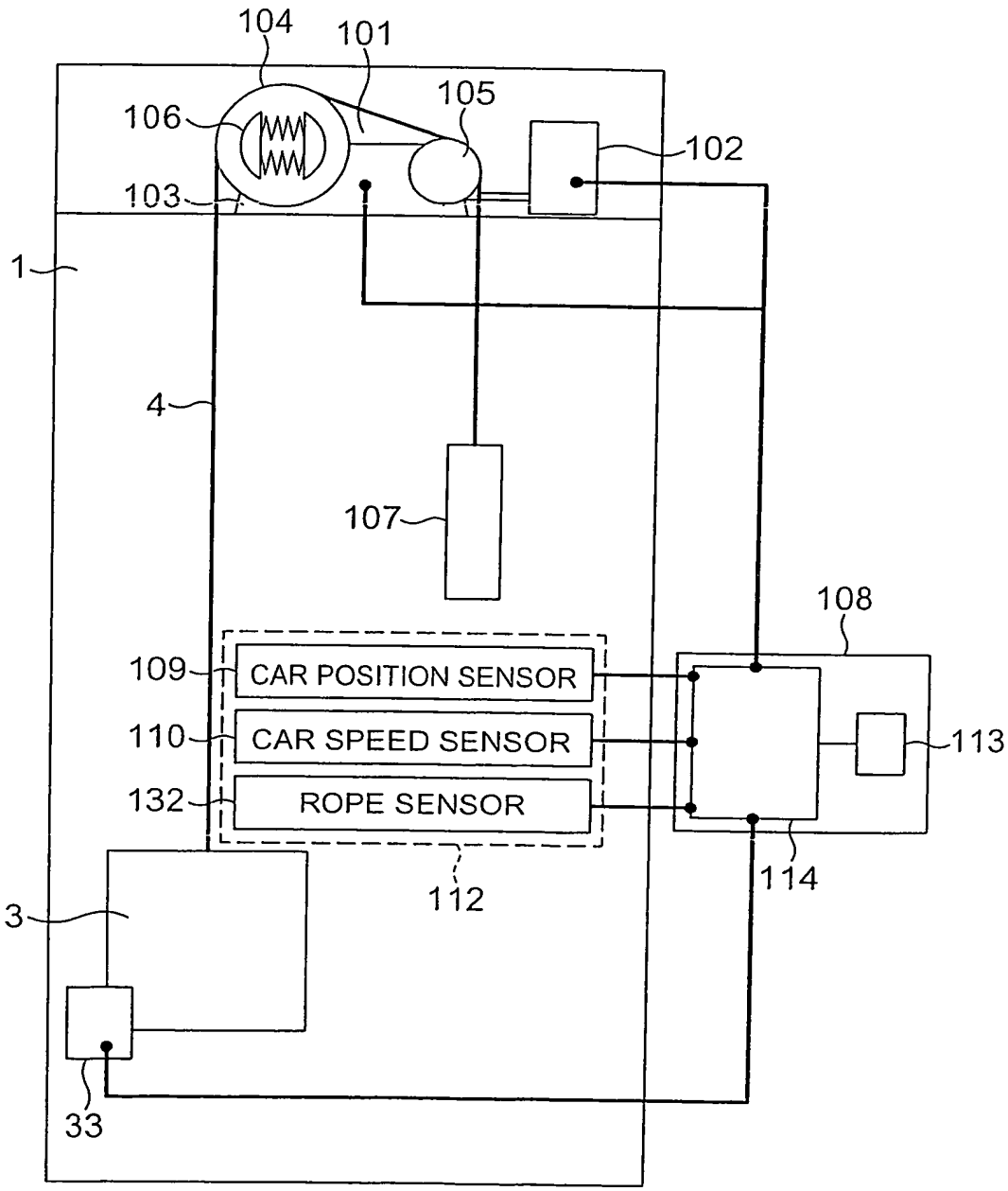

104
101
105
106
102
103
1
4
107
108
109
CAR POSITION SENSOR
110
CAR SPEED SENSOR
113
132
ROPE SENSOR
112
114
3
33

FIG. 23

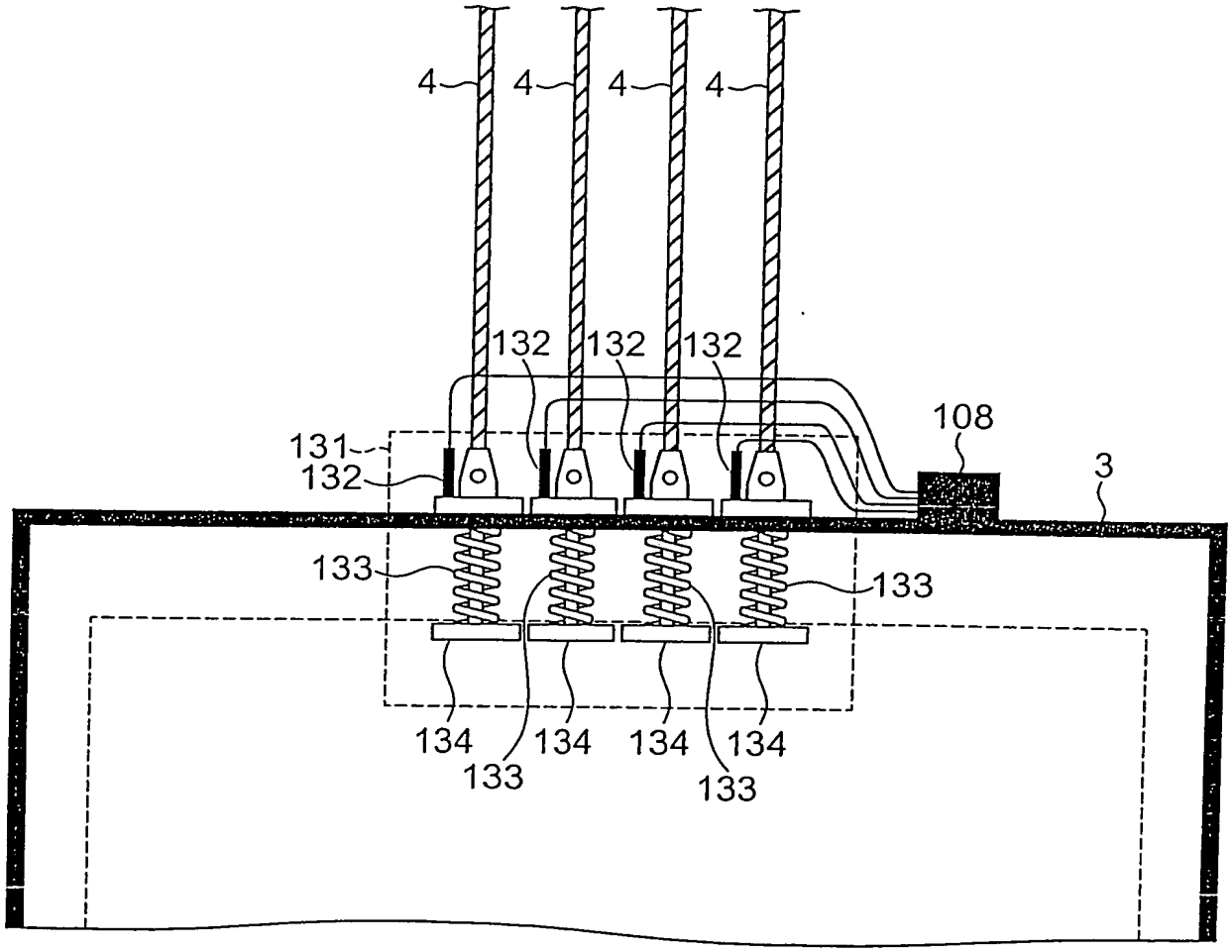


FIG. 24

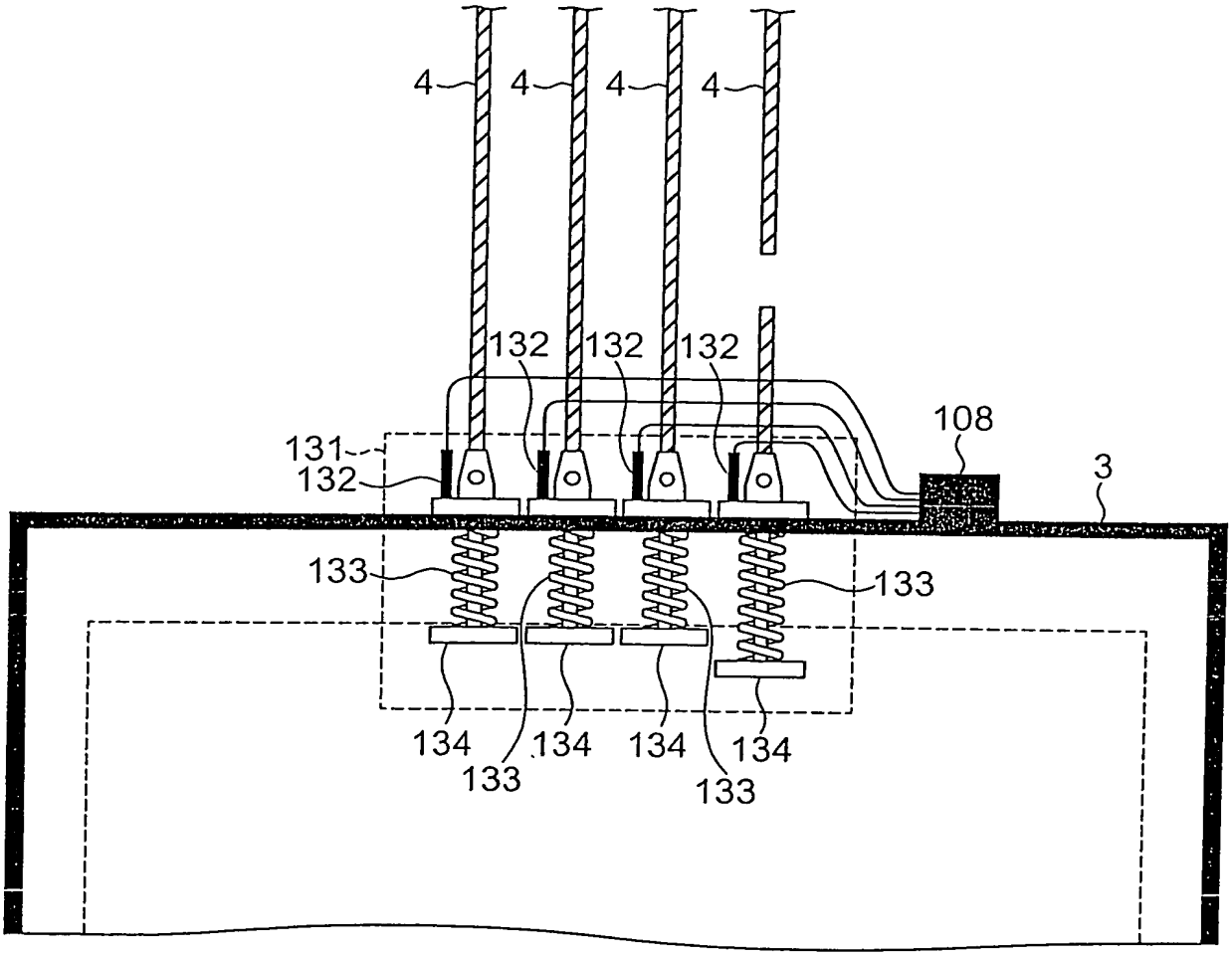


FIG. 25

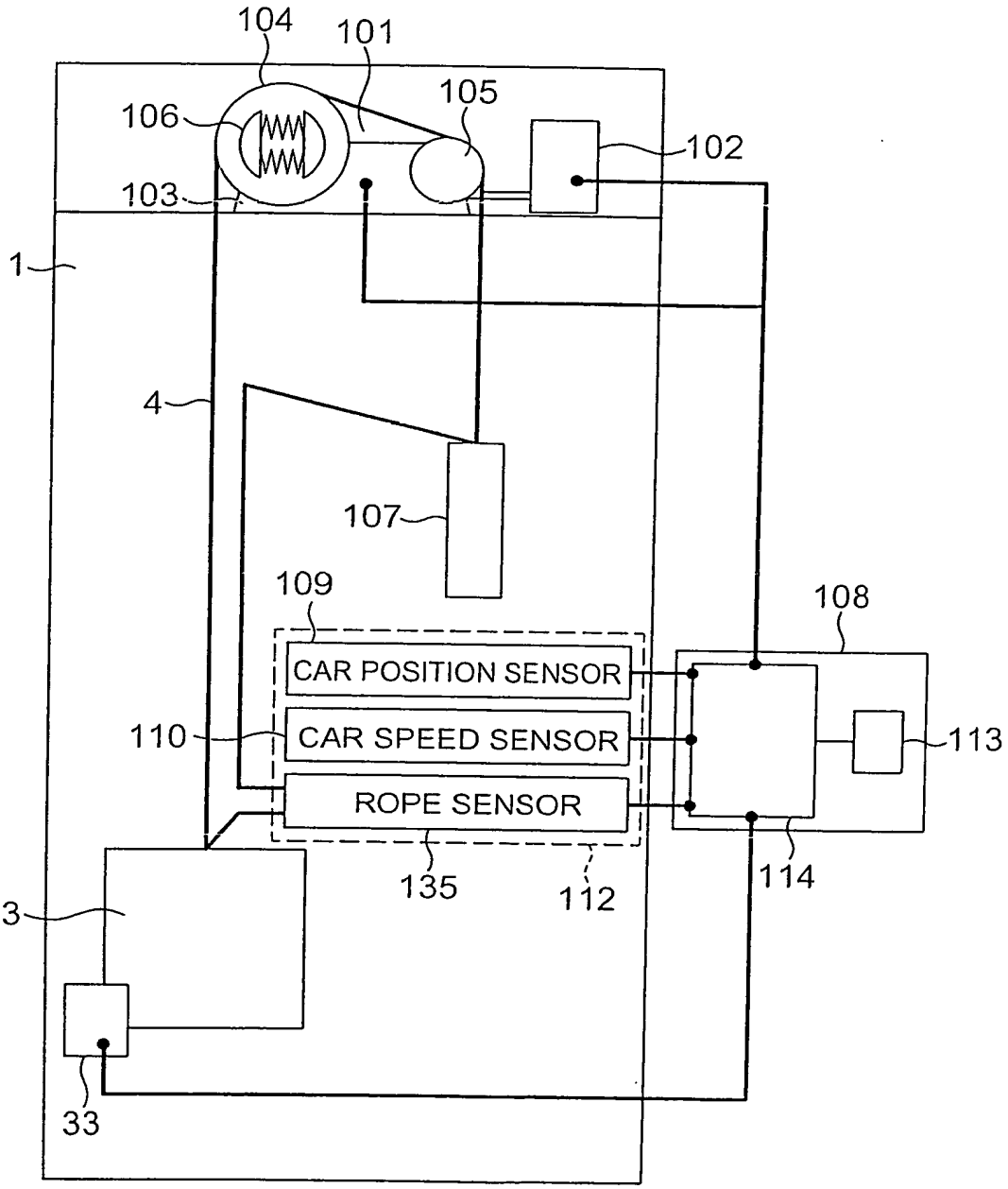

104
101
105
106
102
103
1
4
107
109
108
CAR POSITION SENSOR
110
CAR SPEED SENSOR
113
ROPE SENSOR
135
112
114
3
33

FIG. 26

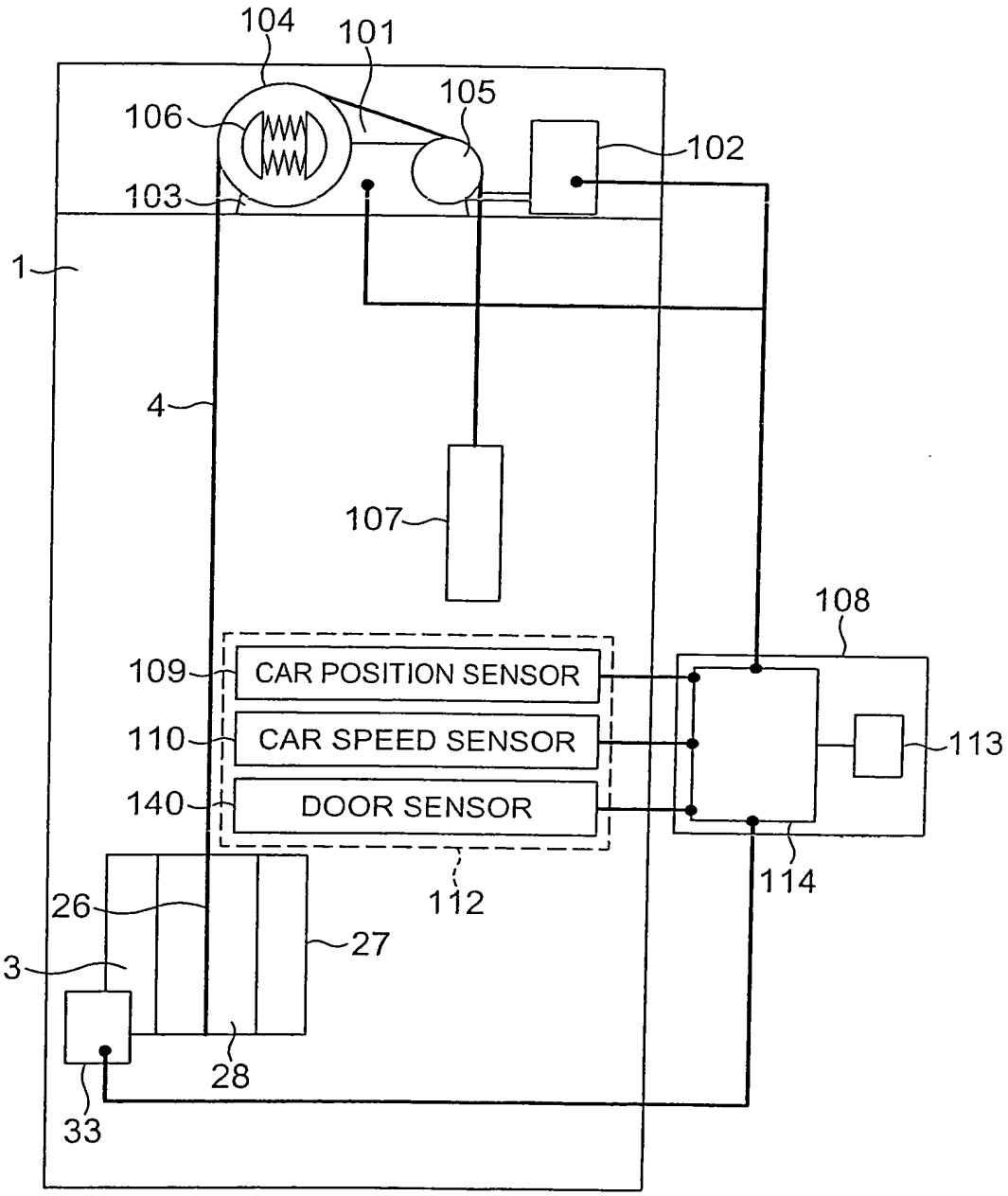

104
101
105
106
102
103
1
4
107
108
109
CAR POSITION SENSOR
110
CAR SPEED SENSOR
140
DOOR SENSOR
113
112
114
26
27
3
28
33

FIG. 27

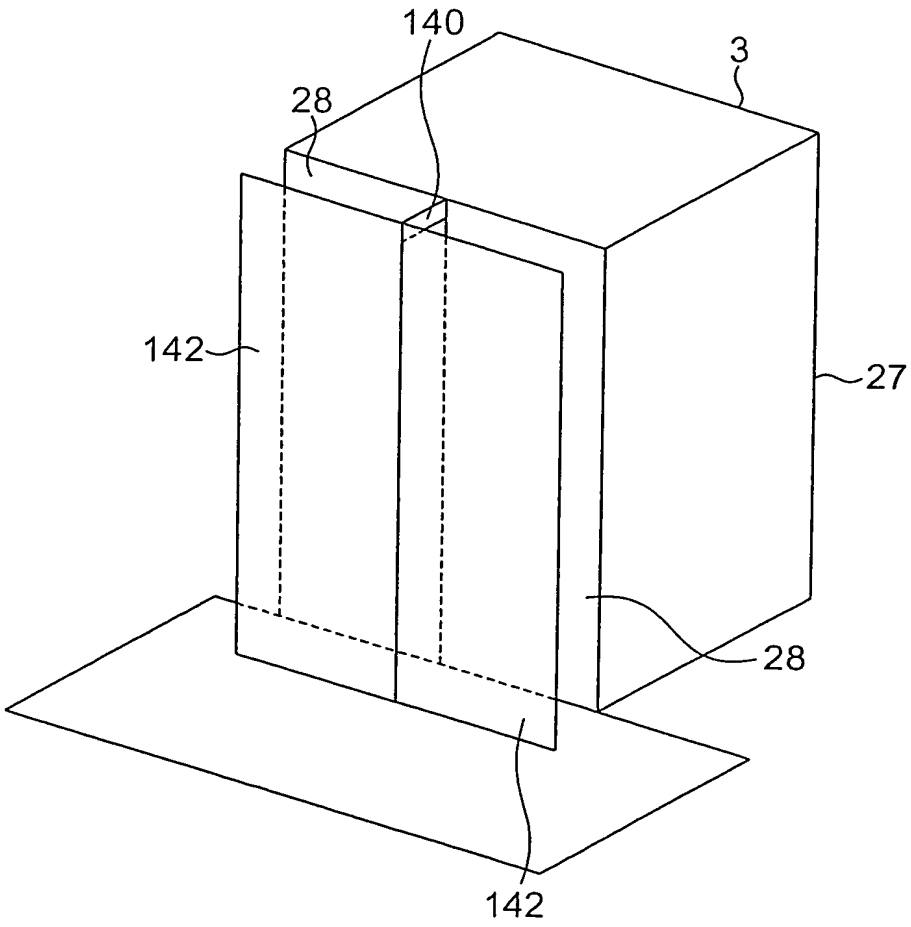


FIG. 28

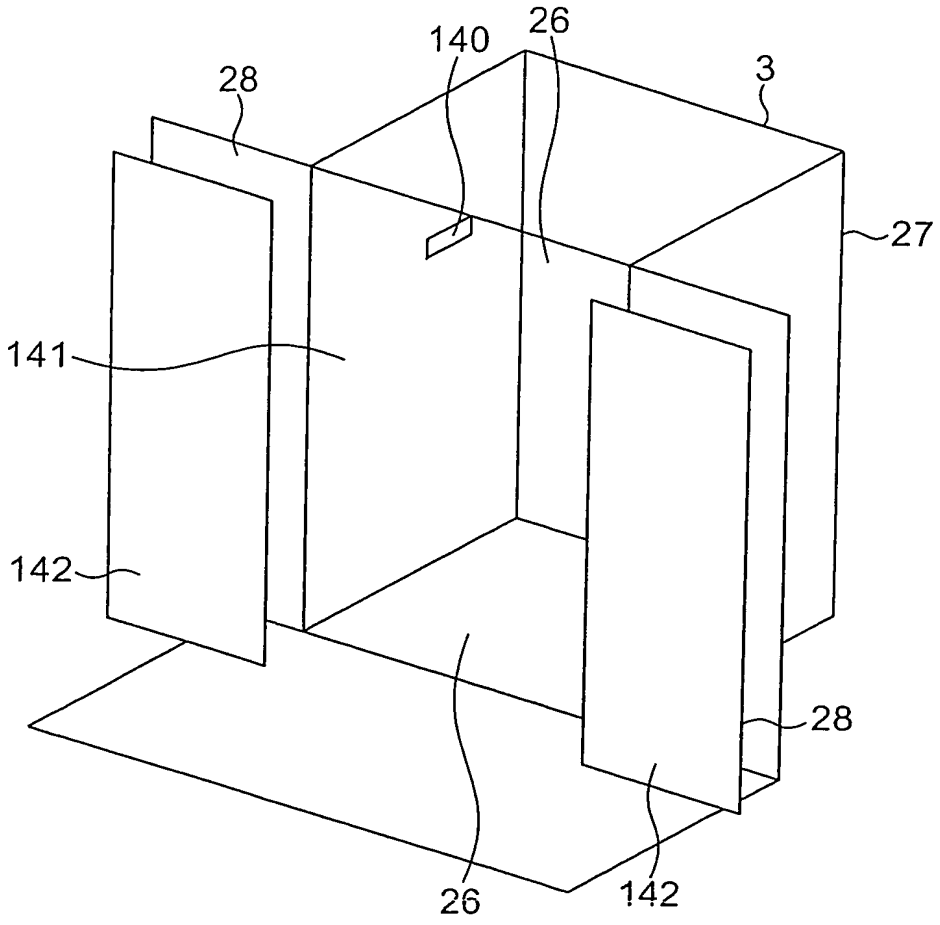


FIG. 29

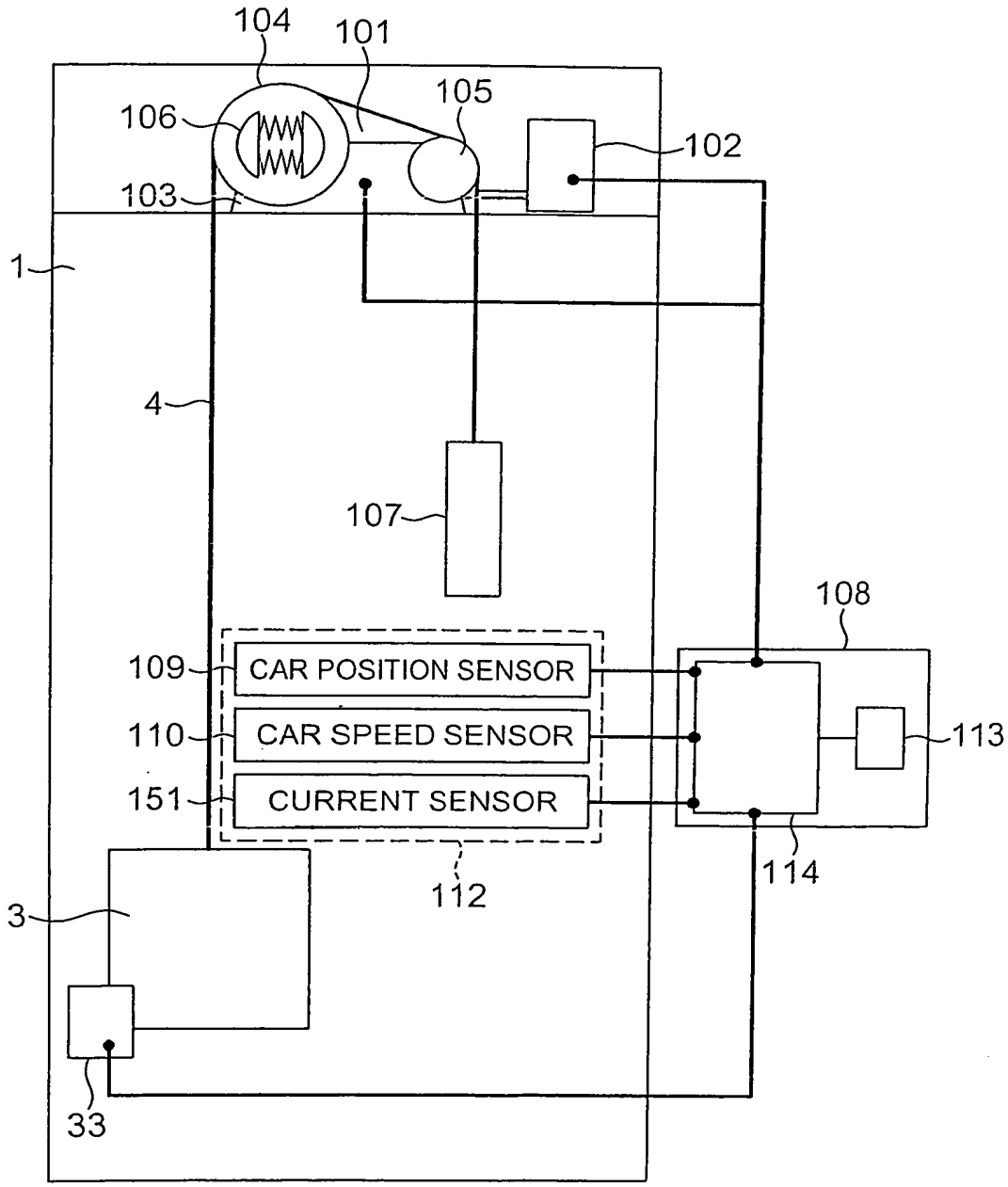

104
101
105
106
102
103
1
4
107
108
109
CAR POSITION SENSOR
110
CAR SPEED SENSOR
113
151
CURRENT SENSOR
112
114
3
33

FIG. 30

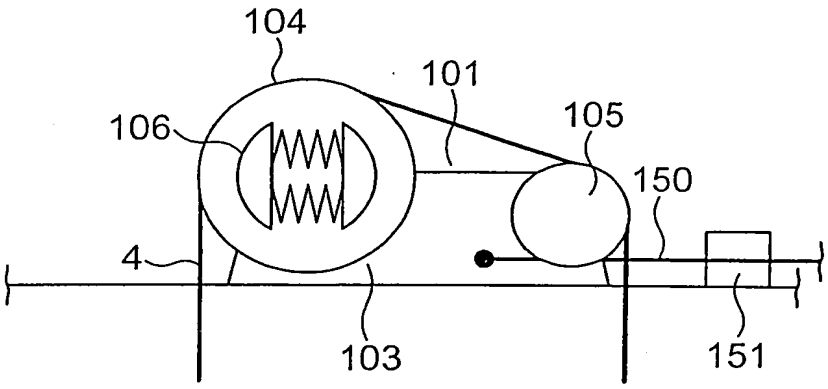


FIG. 31

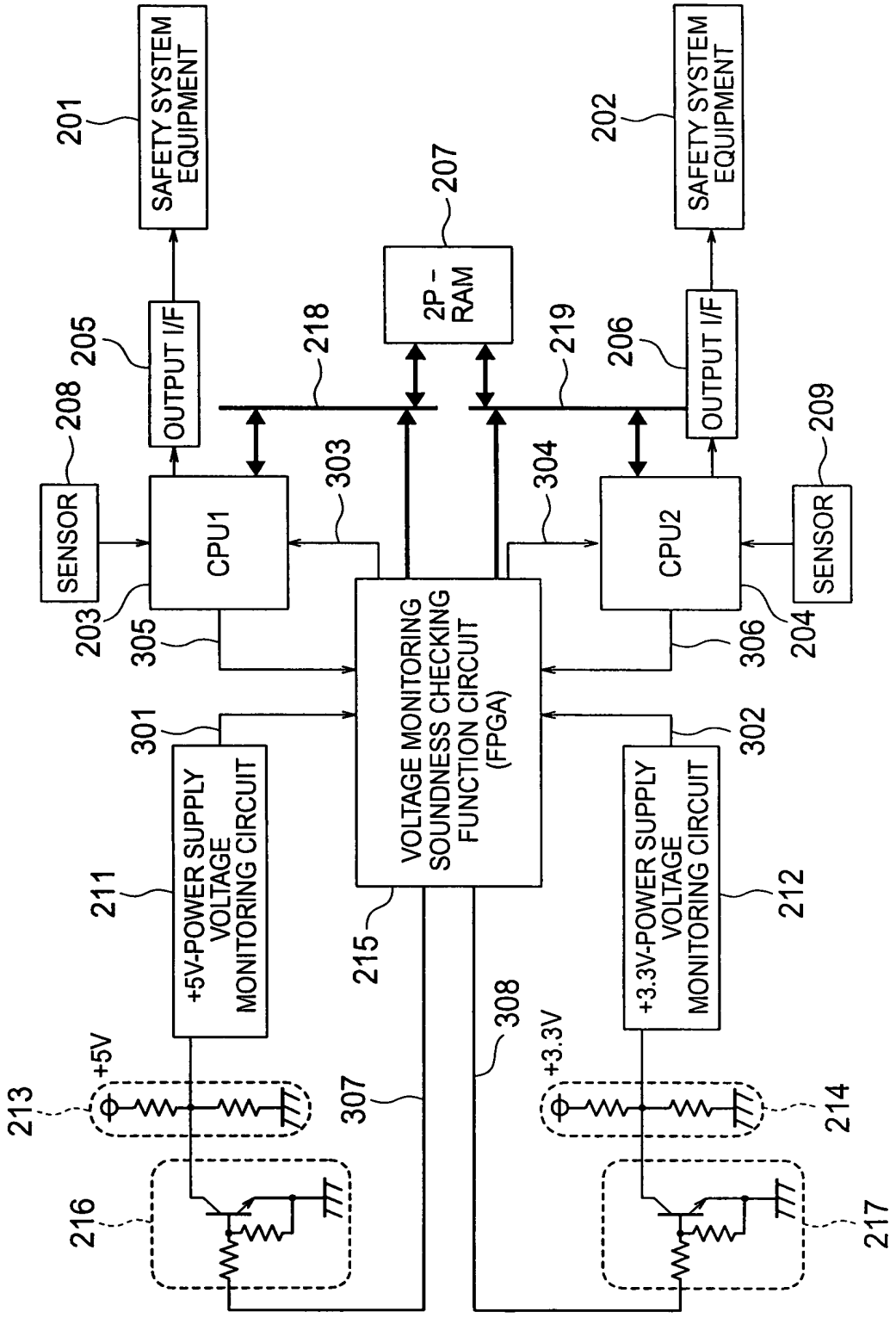

SAFETY SYSTEM EQUIPMENT
201
SAFETY SYSTEM EQUIPMENT
202
2P - RAM
207
OUTPUT I/F
205
OUTPUT I/F
206
218
219
208
SENSOR
CPU1
303
304
CPU2
SENSOR
209
203
305
VOLTAGE MONITORING SOUNDNESS CHECKING FUNCTION CIRCUIT (FPGA)
306
204
301
302
+5V-POWER SUPPLY VOLTAGE MONITORING CIRCUIT
211
215
308
+3.3V-POWER SUPPLY VOLTAGE MONITORING CIRCUIT
212
+5V
+3.3V
213
307
214
216
217

FIG. 32

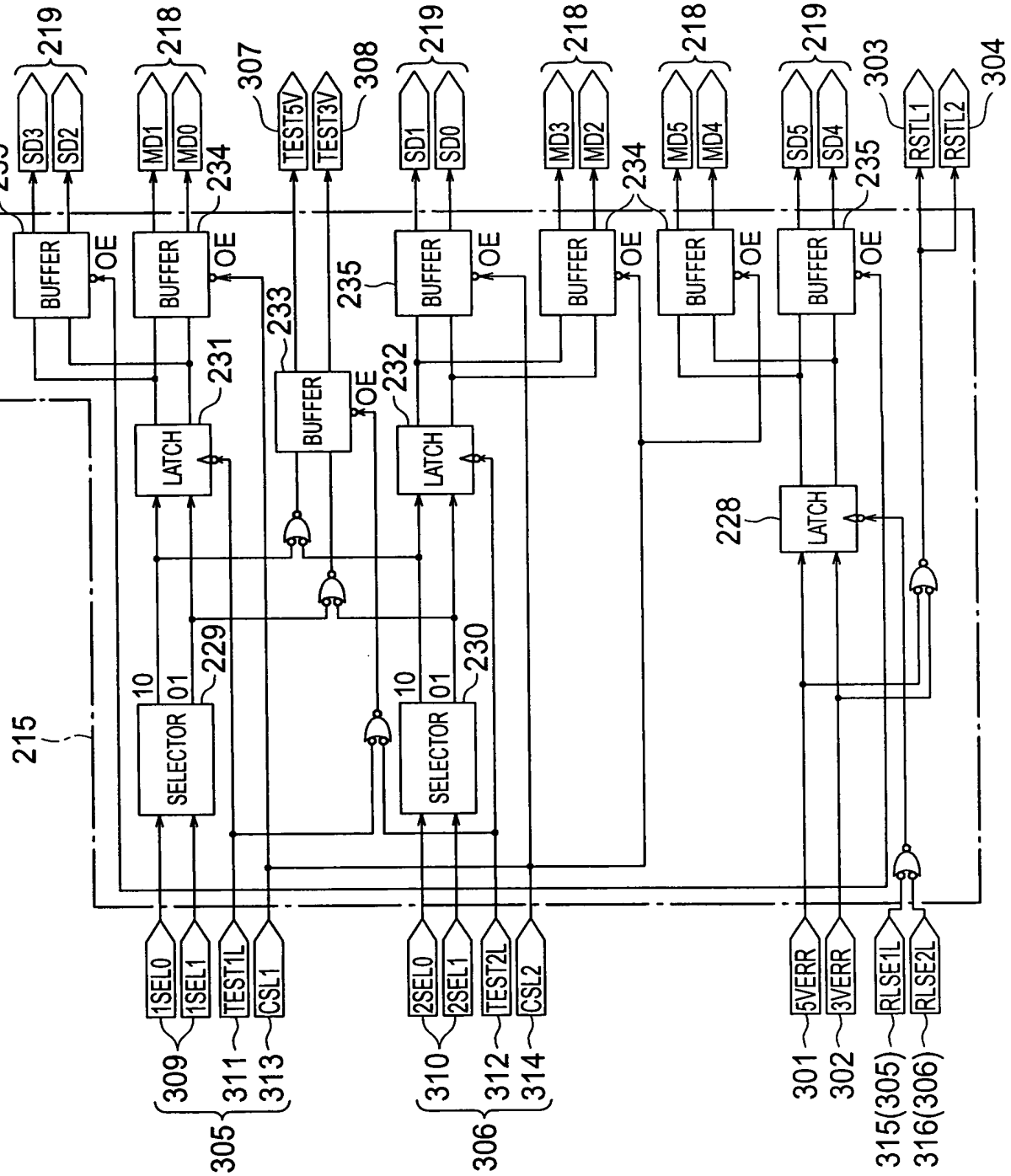

SD3
SD2
MD1
MD0
TEST5V
TEST3V
SD1
SD0
MD3
MD2
MD5
MD4
SD5
SD4
RSTL1
RSTL2
219
218
307
308
303
304
235
234
233
232
231
228
215
BUFFER
OE
LATCH
SELECTOR
10
01
229
230
1SEL0
1SEL1
TEST1L
CSL1
2SEL0
2SEL1
TEST2L
CSL2
5VERR
3VERR
RLSE1L
RLSE2L
309
311
313
310
312
314
301
302
315(305)
316(306)
305
306

FIG. 33

DATA BIT	MD5 (SD5)	MD4 (SD4)	MD3 (SD3)	MD2 (SD2)	MD1 (SD1)	MD0 (SD0)
MEANING OF VALUE	<ABNORMAL VOLTAGE CRITERIAL VALUE> MD5 (SD5) : 0→3.3V ABNORMAL VOLTAGE 1→NORMAL VOLTAGE MD4 (SD4) : 0→5V ABNORMAL VOLTAGE 1→NORMAL VOLTAGE		<SELECTED VOLTAGE VALUE FOR CHECKING SOUNDNESS (OF CPU ON THE OTHER SIDE)>		<SELECTED VOLTAGE VALUE FOR CHECKING SOUNDNESS (OF CPU ON OWN SIDE)>	

MD3 (SD3)	MD2 (SD2)	SELECTED VOLTAGE
0	1	3.3V
1	0	5V
OTHER THAN ABOVE-MENTIONED COMBINATION		NOT SELECTED

MD3 (SD3)	MD2 (SD2)	SELECTED VOLTAGE
0	1	3.3V
1	0	5V
OTHER THAN ABOVE-MENTIONED COMBINATION		NOT SELECTED

FIG. 34

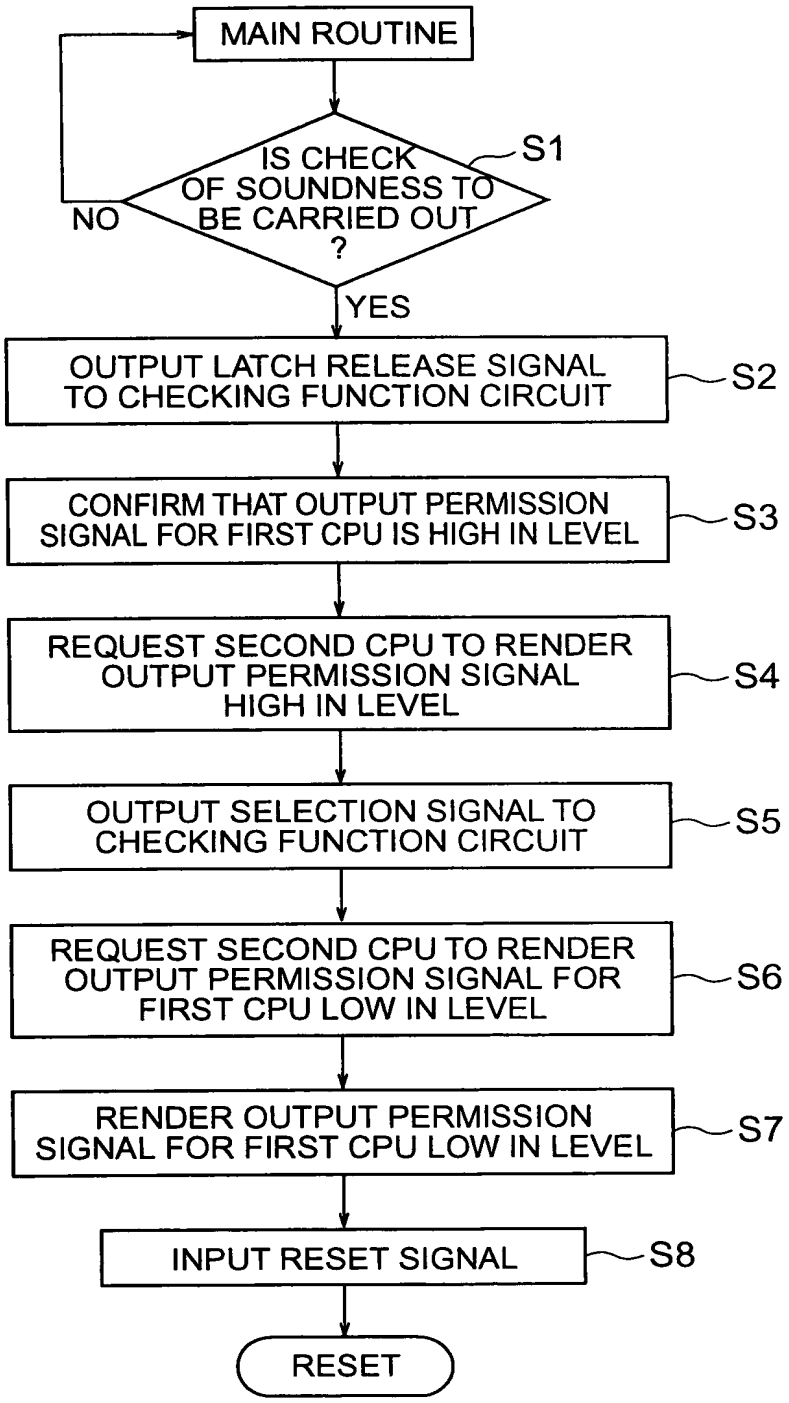

MAIN ROUTINE
IS CHECK OF SOUNDNESS TO BE CARRIED OUT ?
S1
NO
YES
OUTPUT LATCH RELEASE SIGNAL TO CHECKING FUNCTION CIRCUIT
S2
CONFIRM THAT OUTPUT PERMISSION SIGNAL FOR FIRST CPU IS HIGH IN LEVEL
S3
REQUEST SECOND CPU TO RENDER OUTPUT PERMISSION SIGNAL HIGH IN LEVEL
S4
OUTPUT SELECTION SIGNAL TO CHECKING FUNCTION CIRCUIT
S5
REQUEST SECOND CPU TO RENDER OUTPUT PERMISSION SIGNAL FOR FIRST CPU LOW IN LEVEL
S6
RENDER OUTPUT PERMISSION SIGNAL FOR FIRST CPU LOW IN LEVEL
S7
INPUT RESET SIGNAL
S8
RESET

FIG. 35

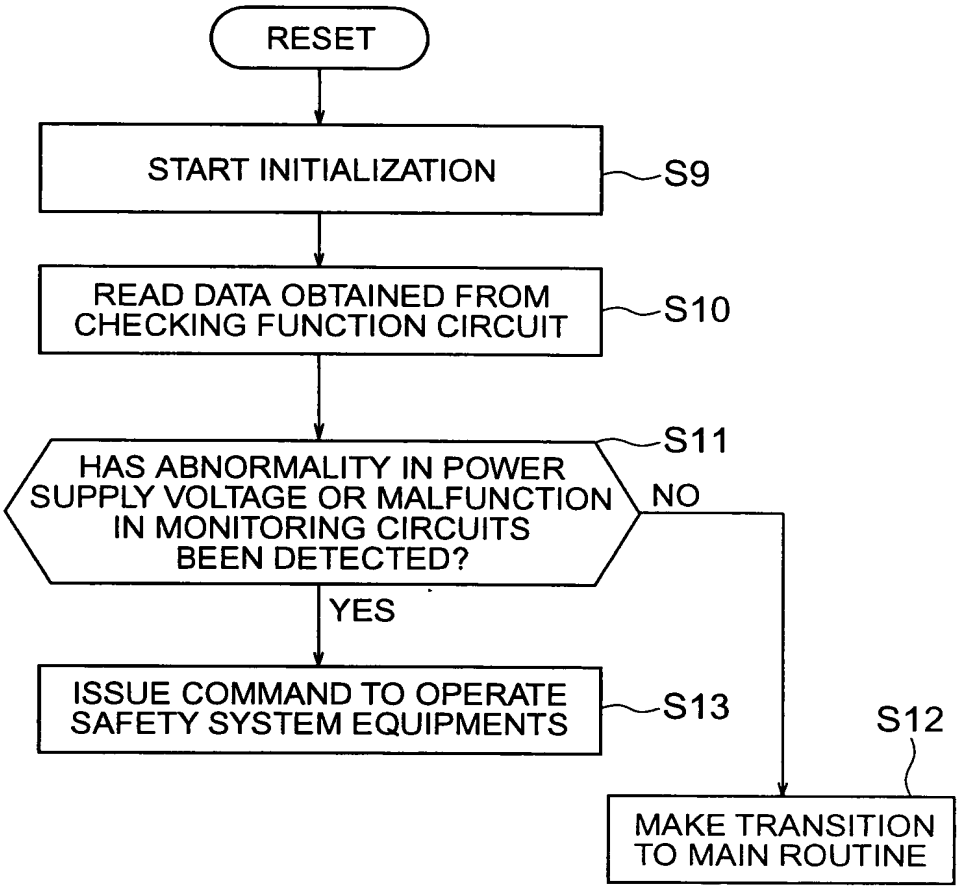
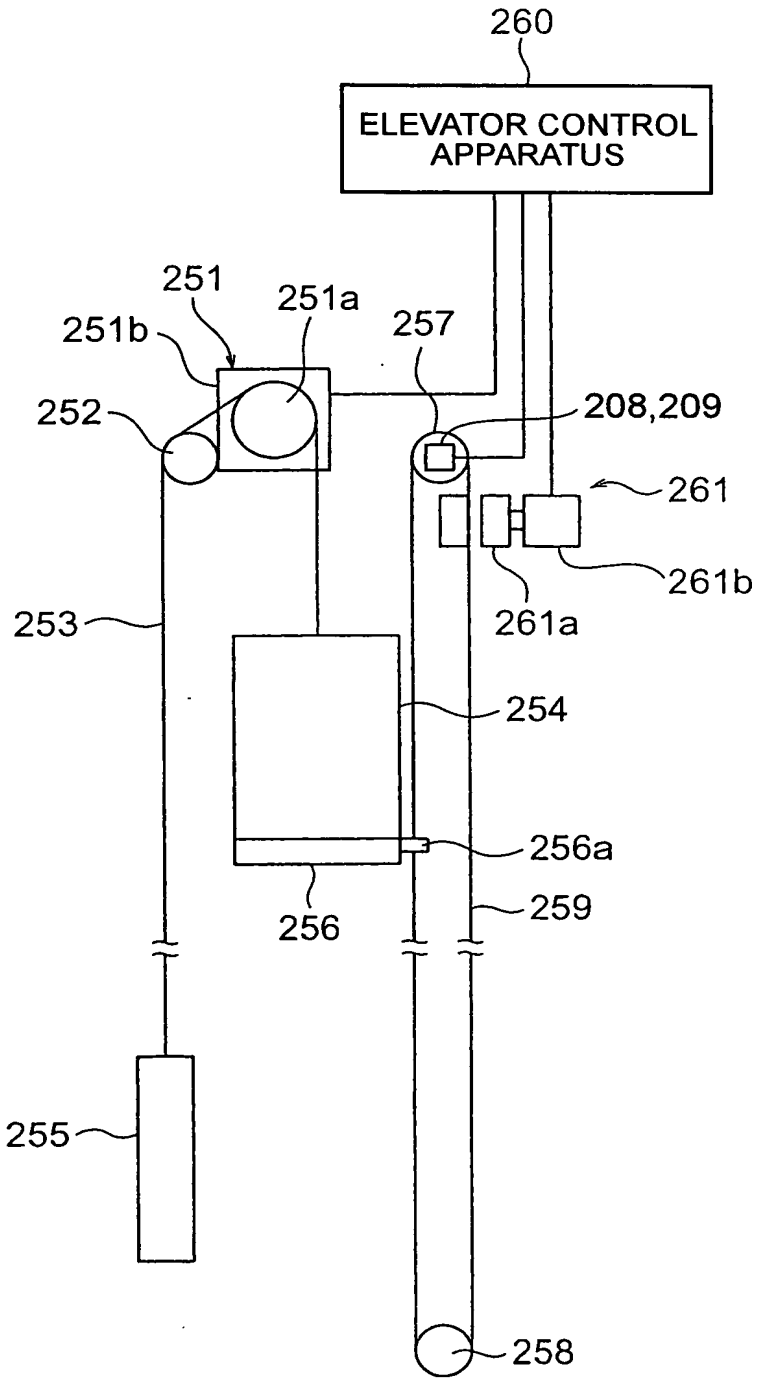

RESET
START INITIALIZATION
S9
READ DATA OBTAINED FROM CHECKING FUNCTION CIRCUIT
S10
S11
HAS ABNORMALITY IN POWER SUPPLY VOLTAGE OR MALFUNCTION IN MONITORING CIRCUITS BEEN DETECTED?
NO
YES
ISSUE COMMAND TO OPERATE SAFETY SYSTEM EQUIPMENTS
S13
S12
MAKE TRANSITION TO MAIN ROUTINE

FIG. 36


260
ELEVATOR CONTROL APPARATUS
251
251a
251b
257
252
208,209
261
261b
261a
253
254
256a
256
259
255
258